

Amendment  
Serial No. 09/450,054  
Page 3

### REMARKS

In the Office Action, the Examiner noted that claims 1-11 are pending in the application and that claims 1-11 stand rejected. By this response claims 2-6, 8, and 9 are amended to correct for informalities and claims 1, 7, and 10-11 continue un-amended.

In view of the following discussion, the Applicant respectfully submits that none of the claims now pending in the application is anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provisions of 35 U.S.C. § 103. Thus, the Applicant believes that all of these claims are now in allowable form.

#### A. 35 U.S.C. § 102(b)

The Examiner rejected claims 1-5 and 10-11 under 35 U.S.C. § 102(b) as being anticipated by Watanabe et al., U.S. Patent 5,309,001. The rejection is respectfully traversed.

#### Claim 1

The Examiner alleges that Watanabe et al. discloses a network Fig. 12a for distributing a power signal in an optoelectronic circuit 350 comprising a plurality of electrically conductive pathways forming at least one level, wherein the portions of the conductive pathways are interconnected; a plurality of segments 353a-353b forming each level, wherein each segment of the level is equal in length; means for coupling 347/352 the power signal from a primary input to a point at the center of a first level; terminal nodes 359a-b coupled at the extremities of a last level for supplying the power signal to devices that form at least a portion of the optoelectronic circuit 350; and wherein the number of segments connecting the primary input to each of the terminal nodes is equal. The Applicant respectfully disagrees.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the

Amendment  
Serial No. 09/450,054  
Page 4

claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1983)) (emphasis added).

Watanabe et al. teaches a surface electrode on the surface of a LED, wherein the surface electrode and the semiconductor layer are in electrical contact with each other at ends of the highest-order branches. (See Watanabe et al., ABSTRACT). Watanabe et al. fails, though, to disclose at least the invention of the Applicant's claim 1 as follows:

"A network for distributing a power signal in an optoelectronic circuit, said network comprising:  
a plurality of electrically conductive pathways forming at least one level, wherein portions of said conductive pathways are interconnected;  
a plurality of segments forming each level, wherein each segment of a level is equal in length;  
means for coupling said power signal from a primary input to a point at the center of a first level;  
terminal nodes coupled at the extremities of a last level for supplying said power signal to devices that form at least a portion of said optoelectronic circuit; and  
wherein the number of segments connecting said primary input to each of said terminal nodes is equal." (emphasis added).

Within the context of the present invention, the Applicant discloses:

"Terminal nodes are coupled to the endpoints of the last level of the H-tree. In this manner a conductive pathway is formed from the primary input to each terminal node, with portions of each conductive pathway being shared between two or more terminal nodes." (See Specification, page 7, lines 13-16).

"The first level is coupled to the primary input, at the center of the two horizontal segments of the H pattern. The conductive pathways distribute a power signal to terminal nodes 16 (represented by circles and as further indicated in the upper right hand quadrant for a portion of the terminal nodes of FIG. 3) on VLSI chip 20, wherein the distance from the primary input to each terminal node 16 is equal. In this illustrative example, each terminal node 16 represents a VCSEL and its associated driver." (See Specification, page 6, lines 22-29).

Amendment  
Serial No. 09/450,054  
Page 5

It is evident from the Applicant's claim 1 and the disclosure, that the Applicant's invention is directed at least in part to "terminal nodes coupled at the extremities of a last level for supplying said power signal to devices that form at least a portion of said optoelectronic circuit." In one embodiment of the present invention, the devices were illustrated as VCSELs. The embodiment of the invention in that case was in part directed to ensuring that the threshold currents and voltages of each VCSEL are identical and that each VCSEL in an array is biased identically via the terminal nodes. (See Specification, page 6, lines 10-13).

In contrast, there is absolutely no teaching in Watanabe et al. for "terminal nodes coupled at the extremities of a last level for supplying said power signal to devices that form at least a portion of said optoelectronic circuit." In contrast to the Applicant's invention and specifically with reference to Fig. 12a as pointed out by the Examiner, Watanabe et al. teaches a surface electrode wherein:

"At the ends of the sixth-order branches 358a and 358b, there are provided contact portions 359a and 359b for making ohmic contact with the underlying semiconductor layer 351. Meanwhile, the rest of the surface electrode 347 other than the contact portions 359a and 359b is in a state in which a Schottky barrier are yielded on the surface of the semiconductor layer 351." (See Watanabe et al., col. 16, lines 1-7).

In the invention disclosed in Watanabe et al., the ends of the sixth-order branches and the semiconductor layer are put into ohmic contact via the contact portions, while the rest of the surface electrode and the semiconductor layer are put into a state in which current flow is suppressed, to facilitate an improvement in quantum efficiency of a LED by allowing any light to easily flow out of a LED. (See Watanabe et al., col. 16, lines 38-50). The terminal nodes of the Applicant's invention are not and cannot be in ohmic contact with an underlying layer for the invention to function as disclosed. As such, the teachings of Watanabe et al. do not anticipate at least th Applicant's claim 1.

Amendment  
Serial No. 09/450,054  
Page 6

Furthermore, there is absolutely no teaching in Watanabe et al. for a network for distributing a power signal "wherein the number of segments connecting said primary input to each of said terminal nodes is equal" as further claimed in the Applicant's claim 1. The Applicant discloses that, "Since the length of each segment is equal for a respective level and the total number of segments to each terminal node is also equal, the length of the conductive pathway from the primary input to each terminal node is the same." (See Specification, page 7, lines 16-19).

Therefore, the Applicant submits that claim 1 is not anticipated by the teachings of Watanabe et al. and, as such, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

Likewise independent claim 10 recites similar relevant features as those recited in claim 1. As such, the Applicant respectfully submits that claim 10 is also not anticipated by the teachings of Watanabe et al. and also fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

Furthermore, dependent claims 2-5 and 11 depend directly from claims 1 and 10 and recite additional features therefor. As such and for at least the reasons set forth herein, the Applicant submits that none of these claims are anticipated by the teachings of Watanabe et al. Therefore the Applicant submits that all these dependent claims also fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

**B. 35 U.S.C. § 103(a)**

The Examiner rejected claims 6-9 under 35 U.S.C. § 103(a) as being unpatentable over Watanabe et al., U.S. Patent 5,309,001, in view of Olbright et al., U.S. Patent 5,266,794/Schneider et al., U.S. Patent 5,351,256/Lebby et al., U.S. Patent 5,337,397. The rejection is respectfully traversed.

Amendment  
Serial No. 09/450,054  
Page 7

### **Claim 6**

Claim 6 depends directly from independent claim 1 and recites limitations thereof. The Examiner applied Watanabe et al. to claim 6 as described above for the Examiner's rejection of claim 1. The Examiner alleges that Watanabe et al. teach all of the stated limitations except for the integrated circuits are VCSELs; instead Watanabe et al. teach the integrated circuits are LEDs. The Examiner further alleges that it is well known in the laser art that one may use either laser source (e.g. LED or VCSEL) as a matter of obvious design choice, see Olbright et al. col. 8, lines 65-68/Schneider et al. col. 1, lines 14-16/Lebby et al. col. 3, lines 17-27.

As described above, the teachings of Watanabe et al. do not suggest or describe at least the Applicants' invention at least with regard to claim 1 for "terminal nodes coupled at the extremities of a last level for supplying said power signal to devices that form at least a portion of said optoelectronic circuit." In addition, the invention of Watanabe et al. is directed to a different problem and discloses a different solution for solving the problem.

Furthermore, the further teachings of Olbright et al., Schneider et al., or Lebby et al., alone or in any combination with Watanabe et al. also do not teach, suggest, or describe the invention of the Applicant, at least with regard to claim 1. Neither Olbright et al., Schneider et al., nor Lebby et al., teach or suggest "terminal nodes coupled at the extremities of a last level for supplying said power signal to devices that form at least a portion of said optoelectronic circuit."

In addition, the disclosures of Olbright et al., Schneider et al. and Lebby et al. pointed out by the Examiner, suggesting that in some applications the function of a LED is interchangeable with the function of a VCSEL in no way renders obvious a network for distributing a power signal wherein, "terminal nodes coupled at the extremities of a last level for supplying said power signal to devices that form at least a portion of said optoelectronic circuit" as claimed in the Applicant's claim 1, in light of a surface electrode on the surface of a LED, wherein the surface electrode and the semiconductor layer are in electrical

Amendment  
Serial No. 09/450,054  
Page 8

contact with each other at ends of the highest-order branches, as disclosed in Watanabe et al.

As such, and at least for the reason that neither Olbright et al., Schneider et al., nor Lebby et al., alone or in any combination with Watanabe et al., do not teach suggest, or describe the Applicants' invention with regards to claim 1, the Applicants respectfully submit that claim 6 is also not rendered obvious by Watanabe et al. In view of Olbright et al., Schneider et al., or Lebby et al.

Therefore, the Applicant submits that claim 6 as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

#### **Claims 7-9**

The Examiner alleges that regarding claims 7-9, Watanabe et al. teach all the stated limitations except for the plurality of electrically conductive pathways being separate; instead, Watanabe et al. teach the pathways being formed of wider/broader pathways that diverge as it branches to a higher level/order. The Applicants respectfully disagree.

Claim 7 is an independent claim that recites similar relevant features as those recited in claim 1. As described above with regard to the Examiner's rejection of claim 1, the teachings of Watanabe et al. do not teach, suggest or describe at least the Applicants' invention with regard to claim 1 for "terminal nodes coupled at the extremities of a last level for supplying said power signal to devices that form at least a portion of said optoelectronic circuit." As independent claim 7 recites similar relevant features as those recited in claim 1, the Applicant respectfully submits that the teachings of Watanabe et al. also do not teach, suggest or describe at least the Applicants' invention with regard to claim 7.

Therefore, the Applicant submits that claim 7 as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Furthermore, dependent claims 8 and 9 depend directly from claim 7 and recite additional features therefor. As such and for at least the reasons set forth

Amendment  
Serial No. 09/450,054  
Page 9

herein, the Applicant submits that none of these claims are obvious with respect to the teachings of Watanabe et al. Therefore the Applicant submits that all these dependent claims also fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

### Conclusion

Thus the Applicant submits that none of the claims, presently in the application, are anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provisions of 35 U.S.C. § 103. Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Eamon J. Wall, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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JUL 22 2002

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Amendment  
Serial No. 09/450,054  
Page 10

**MARKED UP CLAIMS**

2. (Amended) The network of [invention defined in] claim 1 wherein each level is at least one H-shaped pattern comprising first and second parallel branches each having a respective first and second midpoint, and a third branch interconnecting said first and second midpoints, and wherein said center of said H-shaped pattern is the midpoint of said third branch.

3. (Amended) The network of [invention defined in] claim 1 wherein each level is at least one X-shaped pattern comprising first and second branches each having a respective first and second midpoint and interconnecting said first and second branches at said midpoints, and wherein said center of said X-shaped pattern is the intersection of said first and second branches.

4. (Amended) The network of [invention defined in] claim 1 wherein said network is located on an optoelectronic chip.

5. (Amended) The network of [invention defined in] claim 1 wherein said terminal nodes are optoelectronic devices.

6. (Amended) The network of [invention defined in] claim 1 wherein said terminal nodes are VCSELs.

8. (Amended) The network of [invention defined in] claim 8 [7] wherein each level is at least one H-shaped pattern comprising first and second parallel branches each having a respective first and second midpoint, and a third branch interconnecting said first and second midpoints, and wherein said center of said H-shaped pattern is the midpoint of said third branch.



Amendment  
Serial No. 09/450,054  
Page 11

9. (Amended) The network of [invention defined in] claim 7 wherein each level is at least one X-shaped pattern comprising first and second branches each having a respective first and second midpoint and interconnecting said first and second branches at said midpoints, and wherein said center of said X-shaped pattern is the intersection of said first and second branches.